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The work starts with the morphology and physiology of the seed, continues with germination, the morphology and physiology of the root, stem, leaf, flower, and fruit, gives a chapter to the response of plants to surroundings, and ends with a chapter on cryptogams. The last chapter covers 65 pages, and the preceding part, commonly known as *general botany*, 295 pages. A feature of the book is the "Practical Questions" and "Field Work" which close each chapter.

The book is so written that recitations and a considerable part of the laboratory and fieldwork of the pupil can be taken directly from it, and the more abbreviated directions are detailed enough and suggestive enough for the trained teacher to supply various lines of work to the pupils in the direction of pure botany, or in the directions that are so much followed in the present day—agricultural botany, hygiene, and "civic biology."

That the book is excellent in its general make-up, in its method of presentation, in most of its illustrations, and in its suggestiveness for fieldwork and independent observations on the part of the pupil there can be no doubt; also its scope and selection of material and of experiments are generally good. But it is to be regretted that so many errors in physiology have found their way into the book. Photosynthesis is said to result mainly in the formation of starch. Diffusion and osmosis are not clearly set forth. The result of the action of the clinostat and the centrifuge are confused. Geotropism is variously defined as a *tendency*, a *force*, and a *function*. All that is said on contact stimulus and response is wrong. The pupil is told that the twining of a vine is due to retardation of growth on one side because of contact. Several errors are fundamental and therefore capable of much harm to the young teacher not firmly grounded in science, and especially to the pupil, who is supposed by these studies to be inducted into the truth.

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Soil Fertility and Permanent Agriculture. By CYRIL G. HOPKINS.

Boston: Ginn & Co., 1910. Pp. xxiii+653. Illustrated. \$2.75.

This book, which appeared from the press some months ago, is a profound treatise on the fundamentals of the permanent maintenance of soils. Past practices in careless farming, which have sometimes been called "soil mining," have depleted soils so seriously that the attention of all students of agriculture must be given more intently to the practices which will keep up the fertility of the soil indefinitely. The book comes at a time in the development of agricultural science when there is great need for such study. The author's standing in the agricultural world, and his long experience as a teacher, makes him a most suitable author of such a book. Agricultural college students, as well as high school students, pursuing soil studies, will find it a most valuable addition to the few volumes now available, as related to soil maintenance.

Indeed the book is much to be preferred to the foreign books now offered for American students of this subject.

Dr. Hopkins has divided the subject into the following four parts: Part I, Science and Soil; Part II, Systems of Permanent Agriculture; Part III, Soil Investigations by Culture Experiments; Part IV, Various Fertility Factors.

The tables, illustrations, and maps, in the text are up to date and well suited to student work. The chemistry problems are made as simple as possible. The author's style is "studied and profound" and, indeed, the average farmer will find the book a disappointment because of the depth into which the author enters in the analytical discussions of the many themes taken up. There is a splendid appendix, including a number of topics which the student will have constant reference to.

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High-School Manual for Florida. Prepared by JOHN A. THACKSTON and Others. Gainesville: University of Florida, 1912. Pp. 146.

This bulletin of the University of Florida for the guidance of high-school teachers and principals is admirably adapted to the needs and present possibilities of a state whose educational system is passing out of the primitive stage into a period of strong progress. The manual is noteworthy in that it is up to date, progressive, practical, modest, and free from fads. It aims at the modernization of the high-school course, and points the way along lines that promise results far superior to those of the traditional, largely disciplinary routine. Especially noteworthy is the humanistic emphasis in the sections devoted to the various high-school subjects, particularly the sciences. They are to be taught as human interests, in relation to man and his needs. The section on Civics is a reconstruction of the course in that subject, so as to give a practical study of society, including such topics as local history, local geography, local industries, communication, organized community life, public health, and sanitation, etc. It could be wished that along with these progressive suggestions touching technique and curriculum the editor had brought out explicitly the present need for emphasis on the spirit of high-school teaching. When calling attention to the loss from constant change of teachers, he might have shown that while by paying big salaries the school may get skilled pedagogues and technical excellence of output, it is only by paying the bigger price—by giving to the teacher freedom to do for his pupils the best that he knows and feels—that real teaching can be secured. If, however, the schools of Florida rise to the standard set by this bulletin, there will be a notable advance in efficiency, and the same would be true of many another state.

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